

इंटरनेट

मानक

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“पुराने को छोड़ नये के तरफ”

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IS 10810-20 (1984): Methods of test for cables, Part 20:  
Cold bend test [ETD 9: Power Cables]



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“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”



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*Indian Standard*

**METHODS OF TEST FOR CABLES**

**PART 20 COLD BEND TEST**

**1. Scope**

**1.1** Covers a method to determine resistance to bend of thermoplastic or elastomeric insulation or sheath of electric cables at low temperatures and frost.

**1.2** This test is applicable to specimen of diameter up to and including 12.5 mm, above which this test is considered impracticable. For diameter above 12.5 mm, cold impact test as specified in IS : 10810 ( Part 21 ) - 1984 ' Cold impact test ' is applicable.

**2. Significance** — Sometimes the cables have to be laid in the area of low temperature climatic conditions or frost. Due to constant exposure of the cable to the low temperature or frost conditions, the insulation or sheath of the cable will become hardened and stiff. However, this is a long term effect. Such hardening or stiffness causes cracking of the insulation or sheath and may lead to the failure of the cable. In order to ascertain the suitability or withstandability of the insulating or sheathing materials at low temperature or frost conditions ( when the usage of the cable so warrants ), this cold bend test is carried out.

**3. Terminology** — As given in IS : 1885 ( Part 32 )-1971 ' Electrotechnical vocabulary : Part 32 Cables, conductors and accessories for electricity supply '.

**4. Apparatus**

**4.1 Refrigerator** — An electrically operated and thermostatically controlled cold chamber.

**4.2 Thermometer** — To monitor the low temperature inside the refrigerator.

**4.3 Smooth Metal Mandrel** — Of circular cross-section, as required.

**5. Material** — No material other than the test specimen is required for performing this test.

**6. Test Specimen**

**6.1** Core, with conductor in place but all coverings over insulation removed carefully without damaging the insulation or specimen from completed cable as applicable. The length of the each test specimen should be sufficient to perform the test ( approximately 150 times the diameter of the specimen ).

**6.2 Number of Specimens** — Two. Additional specimens may also be required ( see 8.3 ).

**7. Conditioning** — No pre-conditioning of the test specimen is required.

**8. Procedure**

**8.1** The test specimen prepared as described in 6 together with the circular metal mandrel whose diameter is approximately 10 times the diameter of insulated core shall be cooled in air in refrigerator at a temperature specified in relevant specification for a period of not less than 2 hours and not more than 3 hours.

**8.2** At the end of this period and immediately after removal from the refrigerator each test specimen shall be wound round the mandrel for three complete turns in a close helix. The rate of winding should be approximately one turn per second.

**8.3** The test specimen while still on the mandrel shall be examined for any cracks or scales, visible to the unaided eye.

If either or both of the test specimens fail, the test shall be repeated on four specimens. The results shall be regarded as satisfactory if none of these fails.

Adopted 14 March 1984

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9. Tabulation of Observations

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<i>Test Specimen No.</i>	<i>Cracks Observed ( Yes or No )</i>
1.	
2.	
<i>Additional Specimens ( if any )</i>	
3.	
4.	
5.	
6.	

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10. Calculation — No calculation is involved.

11. Report

11.1 Cold Bend Test for Insulation and Sheath:

- a) Cable type
- b) Batch No./Lot No.
- c) Cable No /Drum No.

11.2 Results:

Reference specification \_\_\_\_\_

Failures, if any, in the first two specimens \_\_\_\_\_

Failures, if any, in the additional specimens if tested \_\_\_\_\_

11.3 Conclusion — Specimen meets/does not meet the requirements of the specification.